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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,535	12/06/2000	Jerome Collin	51005.P200	2069

25943 7590 08/29/2002

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EXAMINER

THOMPSON, ANNETTE M

ART UNIT PAPER NUMBER

2825

DATE MAILED: 08/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/731,535

Applicant(s)

JEROME COLLIN ET AL.

Examiner

A. M. Thompson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 16-21 and 31 is/are rejected.
- 7) ☒ Claim(s) 7-15 and 22-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This application, number 09/731,535, has been examined. Claims 1-31 are pending.

#### ***Specification***

1. The disclosure is objected to because of the following informalities: In the Abstract, line 2, change "define" to *defined*.

Appropriate correction is required.

#### ***Claim Objections***

2. **Claims 1-31** are objected to because of the following: Pursuant to **claims 12-15 and 27-30**, in the claim preambles, change "comprise" to *comprises*. The noun "set" (in phrase set of functions) requires the use of a singular verb. Pursuant to **claims 1, 16, and 31**, Applicants claim to "a method" does not sufficiently define what Applicants intend to claim. Applicants must revise the preamble so that it more descriptive of the invention. Claims not specifically mentioned and objected to herein (i.e. **claims 2-11 and 17-26**), are likewise objected to because they depend from an objected to base claim. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Rejection of claims 1-6, 16-21 and 31**

5. **Claims 1-6, 16-21 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over McElvain, U.S. Patent 6,182,268. McElvain discloses a method and apparatus for automatic extraction of finite state machines. McElvain, however, does not explicitly disclose the use of a conversion matrix. This matrix, however, is not a term of art. Applicants describe it as a representation of a circuit element in a generic format. McElvain discloses the use of symbolic representations of state machines that model the behavior (the current and next states) of a circuit. McElvain uses the terms tables, state diagrams, and similar graphic representations. So, even if the use of a table and state diagram to represent circuit states did not suggest Applicants' conversion matrix, as Examiner asserts that it surely does, the mention of similar graphic representations is sufficiently broad in scope to include the function of a conversion matrix. It therefore would have been obvious to one of ordinary skill in the art at the time of Applicants' invention that McElvain accounts for the function of a conversion matrix.

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6. Pursuant to **claim 1** which recites [a] method comprising receiving a data structure representing a behavior of a circuit element (col. 4, ll. 25-34) said circuit element being sequential (col. 5, ll. 15-25) and said data structure being defined in a hardware description language using a specific format (col. 4, ll. 20-50 discloses the use of HDL source code); generating a conversion matrix (col. 11, ll. 47-59 discloses the use of a state table, state diagram or similar graphic representation) from the data structure, said conversion matrix to represent the behavior of the circuit element in a generic format (col. 11, line 60 to col. 12, line 20); and determining a generic HDL register and a plurality of generic HDL input logic for the generic HDL register to replicate the behavior represented by the data structure based on the conversion matrix (col. 11, line 60 to col. 12, line 63).

7. Pursuant to **claim 2**, wherein the HDL is Verilog (col. 1, ll. 11-21), the data structure is a user defined primitive (col. 4, ll. 12-20, the library of building blocks), and the generic HDL register and the generic HDL input logic consists entirely of Verilog primitives (col. 4, ll. 12-25, wherein the technology building blocks are technology independent).

8. Pursuant to **claim 3**, wherein the specific format comprises a technology-specific format used to create a library of elements from which the circuit element is received (col. 4, ll. 12-20; see also col. 12, ll. 42-45)

9. Pursuant to **claim 4**, wherein the conversion matrix comprises a plurality of entries representing every state of the circuit element and every corresponding next

state of the circuit element (col. 11, ll. 47-59, wherein the current state and next state are represented in the table).

10. Pursuant to **claim 5**, wherein generating the conversion matrix comprises performing a reachability analysis on the conversion matrix to classify whether each particular state of the circuit element defined by the conversion matrix is reachable (col. 11, ll. 21-46; col. 12, ll. 42-56).

11. Pursuant to **claim 6**, wherein generating the conversion matrix (col. 11, ll. 47-59) comprises identifying input signals and an output signal of the circuit element from the data structure; evaluating state transition for the circuit element by evaluating the data structure for a next output signal for each transition of the input signals and for each current output signal; and populating entries of the conversion matrix for each state transition (col. 11, line 60, to col. 13, line 28).

12. Pursuant to **claim 16**, this independent claim incorporates limitations already rejected in independent claim 1, and additionally includes [a] machine-readable storage medium with executable instructions for the method claimed. McElvain also teaches this embodiment at col. 12, line 66 to col. 13, line 33, which accounts for the steps of the method executing as sequences of computer program instructions. Therefore, claim 16 is likewise rejected and includes the rationale of claim 1, *supra*.

13. Pursuant to **claims 17-21**, these dependent claims address the limitations already rejected in claims 2-6, and are likewise rejected based on the same reasoning. The inclusion of a machine-readable storage medium has already been considered and rejected in independent claim 16, *supra*.

14. Pursuant to **claim 31**, this independent claim addresses limitations already rejected in claim 1, *supra*, and additionally recites the use of a processor and machine-readable storage medium. McElvain discloses this feature at col. 13, ll. 6-33. Therefore, claim 31 is likewise rejected and includes the rejection rationale of claim 1, *supra*.

***Allowable Subject Matter***

15. **Claims 7-1~~1~~<sup>38</sup> and 22-26** contain allowable subject matter.

16. Some reasons for the indication of allowable subject matter include: The prior art does not teach or disclose an undefined state (i.e. X) for an individual signal. Nor does the prior art teach or disclose Applicants' disclosed plurality of states.

***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please reference the PTO-892 for a complete listing.

18. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to A.M. Thompson whose telephone number is (703) 305-7441. The Examiner can usually be reached Monday thru Friday from 8:00 a.m. to 5:00 p.m.. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matthew S. Smith, can be reached on (703) 308-1323.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956 or the Customer Service Center whose telephone number is (703) 306-3329.

19. Responses to this action should be mailed to:

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Commissioner of Patents and Trademarks

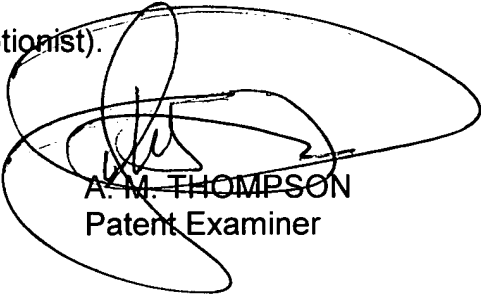
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or faxed to:

(703) 872-9318, (for **OFFICIAL** communications intended for entry)

(703) 872-9319, (for Official **AFTER-FINAL** communications)

Hand-delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA, Fourth Floor (Receptionist).



A. M. THOMPSON  
Patent Examiner

24 August 2002